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Folwell Avenue, St. Paul, Minnesota 55101

FIRE-WEATHER STATIONS IN NORTH-CENTRAL AND NORTHEASTERN UNITED STATES

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John S. Frost, *Meteorological Technician*
and
Donald A. Haines, *Principal Research Meteorologist*
East Lansing, Michigan

ABSTRACT.--Presents the locations of instrumented fire-weather stations that record the data necessary for input into the National Fire Danger Rating System.

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The National Fire Danger Rating System (NFDRS) is based primarily on weather factors representing a specific geographic or fire area.[1] This is a universal danger system, therefore, the composition of individual weather observations and the spatial distribution of observation stations are both essential to total results. However, the density of the observation network varies across the Country because it is dependent on the available resources of the various Federal and State fire management organizations. The objective of this note is to show the locations and density of this fire-weather network in the north-central and northeastern States (fig. 1).

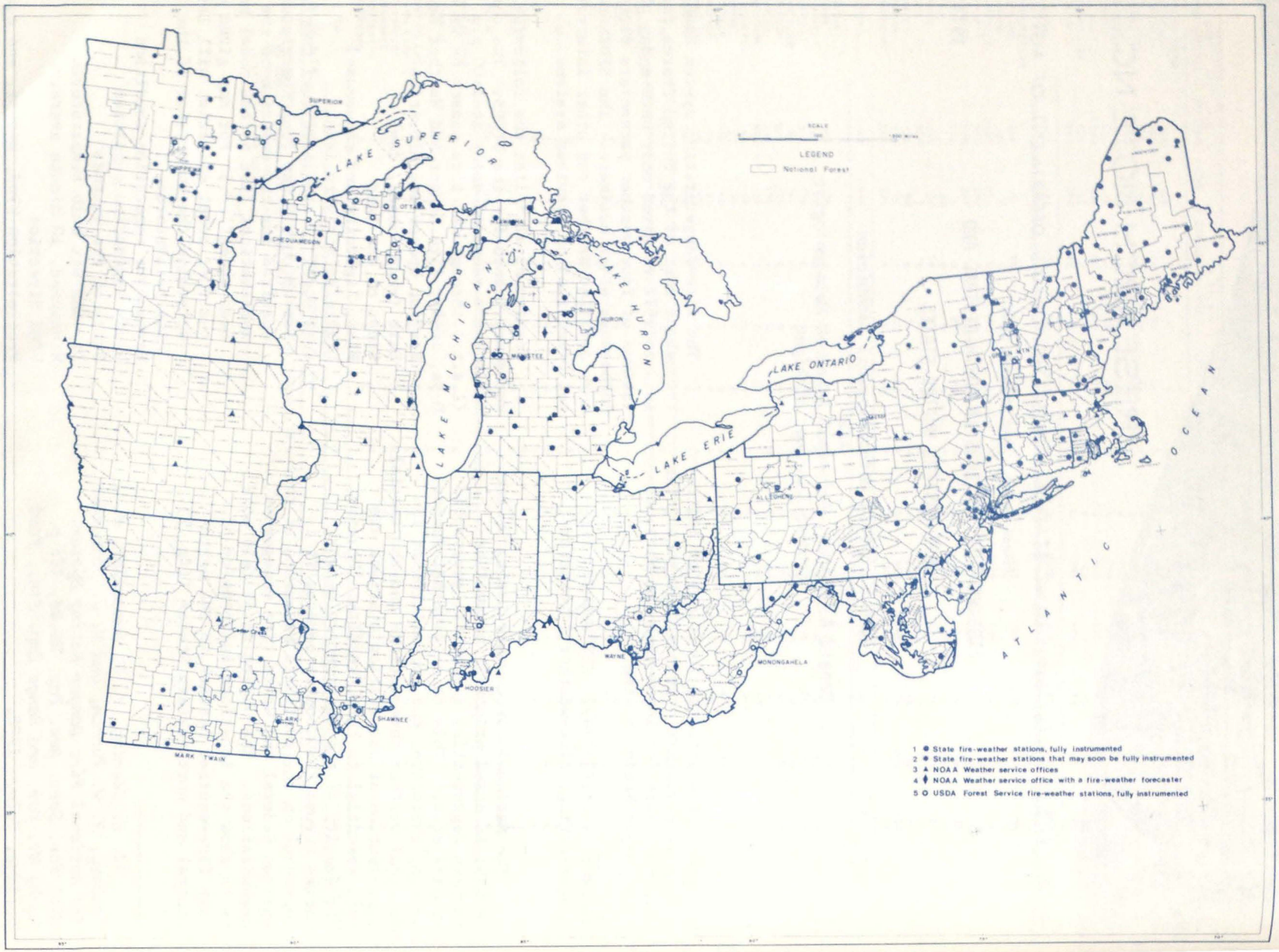
[1] *J. E. Deeming, J. W. Lancaster, M. A. Fosberg, R. W. Furman, and M. J. Schroeder. The National Fire-Danger Rating System. USDA For. Serv. Res. Pap. RM-84, 165 p. Rocky Mt. For. and Range Exp. Stn., Fort Collins, Colo. 1972.*

The fire-danger-rating system used throughout most of the United States from 1964 to 1972 required only once-a-day observations of four weather parameters plus an herbaceous-stage estimate. The NFDRS requires more detailed weather and other information not prescribed by previous systems.

Deeming *et al.*[1] list the following as necessary inputs for the NFDRS. The observations are recorded daily at 1:00 p.m. (l.s.t.) through the fire season on WS Form D-9a, 10-Day Fire Danger And Weather Record:

- Station number and elevation
- Date (year, month, day)
- Slope of the land
- Risk, lightning and man-caused
- Lightning activity level
- Fuel Model (A simulated fuel complex for which all the fuel descriptors required for the solution of the mathematical fire spread model have been specified.) For any given area, the fuel model selection will largely determine the importance of the following parameters:
- Herbaceous vegetation condition
- Woody vegetation condition
- State of the weather
- Dry and wet bulb temperatures
- Windspeed, 10 minute average
- Wind direction
- Precipitation kind, amount, and duration

Figure 1.--*Location of fire-weather stations and National Oceanic and Atmospheric Administration weather service offices.*



Precipitation beginning and ending times
24-hour maximum and minimum temperatures
24-hour maximum and minimum relative humidities
10-hour timelag fuel moisture. (If fuel moisture sticks are not used, a computation can be made using the 1:00 p.m. observation of state of the weather, dry and wet bulb temperatures, plus precipitation duration. These measurements, however, are usually not as representative of actual conditions as those obtained with fuel moisture sticks.)

Not all fuel models require a complete set of these observations for the computation of the fire-danger indicies, but most of them are essential. Our survey of the north-central and northeast area shows the location of weather stations where complete information is now recorded on a routine basis during the fire season.

Although National Oceanic and Atmospheric Administration (NOAA) stations do not use fuel moisture sticks or record vegetative conditions, all necessary weather observations are available, and this will often be sufficient for calculations of the NFDRS. NOAA stations that include a fire-weather forecaster on the staff are designated on the map. Some State fire managers plan to upgrade their weather-station network in the near future. These locations are also identified.

A list of the fire-weather stations and National Oceanic and Atmospheric Administration service offices of the north-central and northeastern States can be obtained from the North Central Forest Experiment Station, USDA Forest Service, Stephen S. Nesbit Building, 1407 S. Harrison Road, Michigan State University, East Lansing, Michigan 48823.

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